Office of Technical Assistance Research Proposal

Reuse of Process Wastewater from Leather Tanning Operations

Background:

There are approximately 110 leather tanning facilities in the United States. They generally fall into Standard Industrial Classification 3111. The industry has suffered dramatic setbacks over the last quarter century, both nationally and in Massachusetts. The industry in Massachusetts is still a sizeable contributor to the overall U.S. market. There are approximately 12 such facilities remaining in Massachusetts. The leather tanning industry disposes of large amounts of water with a high pollutant load. The industry has a complex structure in terms of materials, processes and manufacturing practices.

Scope of Problem:

The leather tanning industry consumes a considerable amount of water in carrying out their business. The water thus consumed is primarily once through in nature. Along with the water, which is discharged from the processing operations, there is also a considerable amount of chemicals. The combined cost can be significant. One Publicly Owned Treatment Works (POTW) in the state indicates that an average of 141,137 gallons of water are **collectively** used on a daily basis by four leather tanning facilities in their district. This represents a range of sizes from a very small company using an average of 2500 gal/day to a large company using an average of more than 70,000 gal/day. Data available indicates that there are six companies surviving in MA that would perform this type of operation.

Objectives:

A research project to study this situation and determine if there is a technically and economically feasible alternative to permit the reclamation and reuse of water is proposed. An ideal area for initial focus would be in the chrome tanning phase of the process. This is because there is significant water use in this step as well as chromium compounds, which end up in the water, discharged. The industry recognizes that there is value in the chromium lost in the process wastewater from this step in the operation. Since this is a very mature industry, and tanning operations should be very consistent from company to company, the amounts of water and chemical used in this part of the process, at least on a percentage basis, should be also.

Scope of Work:

The initial effort should be to determine if reclamation/reuse is feasible, and if it can be accomplished in a cost-effective manner. It would seem logical that a series of steps that would include filtration followed by decolorization, at a minimum, would be required. Reclamation of chemicals present in the used process water worked into the recovery process would be an added bonus. If it is determined that this approach might be

feasible, conducting evaluations with an industry partner would be the logical next phase. Several companies in Massachusetts are felt to be viable candidates for industry partners. It is felt that one of them could be signed on as a partner in such an effort.

Benefit:

The reduction in the use of process water would not only save this valuable resource but would also benefit this struggling industry. This could help the industry to survive, and maintain its competitiveness, especially with foreign markets. The reclamation and reuse of process chemicals would obviously augment the savings and contribute positively. In addition would be the regulatory (and associated cost savings) advantage of not having to test for chrome in their wastewater effluents and possible reduced permitting fees.